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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: WALTER GELON ET AL. : Date: December 11, 2001
Serial No.: 09/328,911 :
Filed: June 9, 1999 : Group Art Unit: 3661
For: PRACTICAL ORBIT RAISING SYSTEM AND :
METHOD FOR GEOSYNCHRONOUS SATELLITES : Examiner: Brian J. Broadhead

RESPONSE TO OFFICE ACTION

Commissioner of Patents and Trademarks
Washington, D. C. 20231

Sir:

In response to the Office Action mailed July 5, 2001, please consider the following remarks regarding the allowability of the above-identified patent application.

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IN THE CLAIMS:

Please amend the following Claims to read as follows.

C1

1. A method for raising a spacecraft launched into a transfer orbit about the Earth from the transfer orbit to a geosynchronous orbit, comprising the steps of:
- launching a spacecraft having chemical and electric propulsion thrusters and a solar array;
- firing the chemical propulsion thrusters at apogees of intermediate orbits, starting from the transfer orbit initiated by the launch vehicle, to successively raise perigees of the orbit until the spacecraft perigee substantially clears the Van Allen radiation belts, and where the semi-major axis of the intermediate orbit is substantially less than the semi-major axis of [the] a final orbit, and where the inclination of the intermediate orbit is substantially greater than the inclination of the final orbit;
- firing the electric propulsion thrusters to raise the orbit of the spacecraft from the orbit achieved by the chemical propulsion thrusters firing step to near geosynchronous orbit by steering the thrust vector both in-plane and out-of-plane while rotating the spacecraft body and steering the solar array to maintain the sun's illumination on the solar array while not maintaining the solar array rotation axis aligned with the orbit normal and while not maintaining an earth facing panel;
- and
- firing selected ones of the chemical and electric propulsion thrusters to achieve final geosynchronous orbit.

C2
Cont.
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23. A system for raising a spacecraft launched into a transfer orbit about the Earth from the transfer orbit to a geosynchronous orbit, comprising:
- a spacecraft comprising chemical and electric propulsion thrusters and a solar array;
- a processor onboard the spacecraft for:
- firing the chemical propulsion thrusters at apogees of intermediate orbits, starting from the transfer orbit initiated by the launch vehicle, to successively raise perigees of the orbit until the